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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/828,309

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EXAMINER

WHIPKEY, JASON T

ART UNIT

PAPER NUMBER

2622

NOTIFICATION DATE

DELIVERY MODE

05/21/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/828,309	<b>Applicant(s)</b> AOTSUKA, YASUO	
	<b>Examiner</b> Jason T. Whipkey	<b>Art Unit</b> 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                            | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 2, 2009, has been entered.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-4 and 6-14 have been considered but are moot in view of the new grounds of rejection.

### ***Claim Rejections - 35 USC § 112***

3. The amendment to the claims has overcome the rejection under 35 U.S.C. 112, second paragraph. The rejections under this section are withdrawn.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, 6-11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter (U.S. Patent No. 6,515,275) in view of Morimoto (U.S. Patent No. 6,515,275).

Regarding **claims 1 and 6-8**, Hunter discloses a solid-state imaging apparatus (such as a digital camera; see column 1, lines 7-11) comprising:

a solid-state imaging device (a photo sensor array) having a plurality of pixels that image light originating from a subject (see column 3, lines 11-21), by dividing the light into a plurality of color signals with a plurality of types of color filters (red, green, and blue, as shown in Figure 5) provided with said plurality of pixels (see column 3, lines 11-21); and

wherein the solid-state imaging device further comprises a plurality of sensors and a plurality of filters (sensors covered with an infrared filter; see column 3, lines 21-24), each sensor associated with a respective filter (see Figure 5), wherein each of the plurality of filters is different from said plurality of types of color filters and has a different transmission characteristic from those of said plurality of types of color filters (infrared vs. visible light), wherein the plurality of sensors detect light in a wavelength range which induces a difference having a

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predetermined value or more (the light source is determined based on whether the difference between the infrared intensity and the RGB intensity is greater than, less than, or equal to zero; see Figure 9 and column 3, line 44, through column 4, line 8) between radiant energy of a first light source and radiant energy of a second light source (as shown in Figure 9, the difference between the intensity of the infrared light and the intensity of the RGB light can be used to determine the light source; see column 3, line 44, through column 4, line 8), the plurality of sensors being provided on the surface of the solid-state imaging device, wherein said plurality of filters are dispersed uniformly over the surface of the solid-state imaging device (see the repeating pattern shown in Figure 5).

While Hunter discloses that a light source type can be determined (see column 3, lines 41-43) for use in correcting white balance, she is silent with regard to including a signal processor to determine a gain corresponding to a plurality of light source types, wherein the processor estimates a mixing ratio between two light sources.

Morimoto discloses a solid-state imaging apparatus (see Drawing 1 in the provided computer translation), comprising:

a signal processor (gain controller 3) that subjects photographed image data output from the solid-state imaging device to white balance correction at a gain corresponding to plurality of light source types (see page 4, lines 1-6, and page 6, lines 5-9),

wherein the signal processor further comprises: a mixing ratio estimation unit (estimate calculation section 28) that determines a mixing ratio between

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illumination light originating from the first light source and illumination light originating from the second light source (see page 4, lines 14-15), through use of a detection signal output from the plurality of sensors (including measured visible and infrared components; see page 6, lines 15-20); and a gain computation unit that computes a gain where the white balance correction is to be effected, in accordance with the mixing ratio (see page 6, lines 2-9).

As suggested on page 3, lines 32-34, determining a white balance gain corresponding to a plurality of light source types is advantageous because color can be corrected more accurately. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Hunter's system include the multi-illuminant signal processor disclosed by Morimoto.

Regarding **claim 4**, Morimoto discloses the signal processor comprises:

a light source type determination unit that determines the type of at least one of the first light source and the second light source from the photographed image data (see page 5, line 44, through page 6, line 2).

Regarding **claims 9-11**, Hunter discloses:

said plurality kinds of filters of types of color filters are red (R), green (G), and blue (B) filters (see column 3, lines 11-21).

Regarding **claim 13**, Hunter discloses:

the plurality of sensors are pixels of the solid-state imaging device which also image light originating from the subject (see column 3, lines 21-24).

Regarding **claim 14**, Hunter discloses:

the plurality of sensors are adjacent pixels of the solid-state imaging device (see Figure 5).

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter in view of Morimoto and Kitajima (U.S. Patent No. 5,808,681).

**Claim 2** can be treated like claim 1. However, Hunter is silent with regard to the mixing ratio and the gain being determined with respect to each of the pixels.

Kitajima discloses an electronic still camera that performs automatic white balancing, wherein:

the mixing ratio (see column 5, lines 24-27) and the gain (see column 5, lines 31-35) are determined with respect to each of the pixels.

As suggested in column 9, lines 8-27, an advantage of calculating a ratio between two light sources and a gain for each pixel is that a more accurate white balance calculation can be produced. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Hunter's system perform these calculations on a per-pixel basis.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter in view of Morimoto and Yamada (U.S. Patent Application Publication No. 2002/0012463).

**Claim 3** can be treated like claim 1. While Morimoto discloses correcting color using a mixing ratio, he is silent with regard to correcting a color tone by multiplying color difference signals by a color difference matrix and correcting coefficients of the matrix.

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Yamada discloses an imaging device (see Figure 1), wherein:

the signal processor comprises: a color tone correction unit (color correcting section 22) for correcting a color tone by multiplying color difference signals determined from the photographed image data by a color difference matrix (see paragraph 39); and

a color difference matrix correction unit (matrix coefficient setting section 20) for correcting coefficients of the color difference matrix (by way of lightness detecting section 20; see paragraph 39).

Combining the device disclosed by Morimoto with the color difference matrices and correcting coefficients disclosed by Yamada would have yielded the predictable result of producing color correction values with fewer system resources. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Morimoto's system use color difference matrices and correcting coefficients, as described by Yamada.

### ***Allowable Subject Matter***

8. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

No prior art could be located that teaches or renders obvious a solid-state imaging device having a plurality of pixels with a plurality of types of color filters and a plurality of sensors with



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a plurality of filters, each sensor associated with a respective filter, wherein each of the plurality of filters is different from said plurality of types of color filters and has a different transmission characteristic from those of said plurality of types of color filters, wherein a signal processor comprises a mixing ratio estimation unit that determines a mixing ratio between illumination light originating from the first light source and illumination light originating from the second light source, through use of a detection signal output from the plurality of sensors, and a gain computation unit that computes a gain where the white balance correction is to be effected, in accordance with the mixing ratio, wherein the plurality of sensors comprise two sensors, wherein peak sensitivity wavelengths for the sensors are substantially within 100 nm of each other.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (571) 272-7321. The examiner can normally be reached Monday through Friday from 9:30 A.M. to 6 P.M. eastern daylight time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye, can be reached at (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason T. Whipkey/  
Examiner, Art Unit 2622